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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,737	10/29/2003	Hirotsuna Miura	9319P-000584	6350
27572	7590	12/27/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			DO, AN H	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/696,737

Applicant(s)

MIURA, HIROTSUNA

Examiner

An H. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 2-10 and 21-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/29/03, 10/27/05</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The Response filed on 03 October 2005 has been acknowledged.

#### ***Election/Restrictions***

1. Applicant's election with traverse of Species A readable on claims 1 and 11-21 in the reply filed on 03 October 2005 is acknowledged. The traversal is on the ground(s) that all of the species are drawn to a related subject matter that would not be burden to Examiner. This is not found persuasive because the different species not only relate to a droplet ejecting device but also to other electronic optical device. Furthermore, claim 21 is a method used for patterning an electronic device and hence, relates to a species different from the elected species A.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 2-10 and 21-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 03 October 2005.

#### ***Information Disclosure Statement***

3. The information disclosure statements (IDS) submitted on 29 October 2003 and 27 October 2005 were filed and are being considered by the examiner. However, the IDS filed on 02 November 2005 is a duplicate copy of IDS filed on 27 October 2005.

### ***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Objections***

5. Claim 1 is objected to because of the following informalities: the word "and" should be added to line 3 after "said pressure chamber;". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 11-13 and 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sohl et al (US 4,509,057).

Burke et al disclose in Figures 1-5 the following claimed features:

Regarding claim 1, a droplet ejecting device (Figure 1, ejector 1) comprising: ejecting means (electromechanical transducer 16) for ejecting a liquid (ink 7) stored in a pressure chamber (5) from an ejecting nozzle (11) by applying pressure to said pressure chamber; and droplet formation assisting means (emitter optical fiber 19) for giving, to said liquid being ejected from said ejecting nozzle, an energy that assists droplet formation (Figure 1).

Regarding claim 11, a droplet ejecting method comprising: an ejecting step of ejecting a liquid (ink 7) stored in a pressure chamber (5) from an ejecting nozzle(11) of said pressure chamber by applying pressure (electromechanical transducer 16) to said pressure chamber (5); and a droplet formation assisting step for giving (emitter optical fiber 19), to said liquid being ejected from said ejecting nozzle (11), an energy that assists droplet formation.

Regarding claim 12, wherein said energy is optical energy (optical fibers 19, 23).

Regarding claim 13, wherein said optical energy is coherent-light energy (column 2, lines 61-62).

Regarding claim 16, wherein said energy is thermal energy (by electromechanical transducer 16).

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Regarding claim 17, further comprising: an ejection timing detecting step of detecting a timing (Figure 3) at which said liquid starts being ejected from said ejecting nozzle, wherein said droplet formation assisting step includes assisting formation of a droplet (31) at a timing when a predetermined time period has elapsed since said timing detected in said ejecting timing detection step.

Regarding claim 18, wherein, in said droplet formation assisting step, a longer period is set as said predetermined time period where a volume of liquid to be ejected is larger (Figures 2 and 4).

Regarding claim 19, wherein said ejection timing detecting step includes: emitting light from a light emission means (emitter 21) for emitting light onto liquid being ejected from said ejecting nozzle (11); receiving light emitted from said light emission means (emitter 21) by a photoreception means (detector 24) that faces said light emission means (emitter 21) through said liquid being ejected (Figure 1); and detecting said timing (Figure 2) at which said liquid starts being ejected in response to a change in an intensity of light received by said photoreception means (detector 24).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claims 14, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sohl et al (US 4,509,057) in view of Endo et al (US 6,513,900).

Sohl et al disclose the claimed invention except for reciting a plurality of light beams traveling different directions and emitting from said light emission means a light having a larger energy than an energy of said light used for detecting said timing at which said liquid starts being ejected.

Endo et al teach in Figures 8-10 a plurality of light beams (L, Lw) traveling different directions and emitting from said light emission means a light having a larger energy than an energy of said light used for detecting said timing at which said liquid starts being ejected (column 14, lines 26-59).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a plurality of light beams traveling different directions and emitting from said light emission means a light having a larger energy than an energy of said light used for detecting said timing at which said liquid starts being ejected, as taught by Endo et al into Sohl et al, for the purpose of detecting the formation of droplets.

#### ***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The

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fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD  
December 20, 2005



An H. Do  
Examiner  
Art Unit 2853